ALLEGHENY PORTAGE RAILROAD, LILLY CULVERT
Pennsylvania Historic Bridges Recording Project
Spanning Burgoon Run at State Rt. 53
Lilly
Cambria County
Pennsylvania

HAER No. PA-452

PHOTOGRAPHS

XEROGRAPHIC COPIES OF COLOR TRANSPARENCIES

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HAER
PA
11-LIL,
1-

HISTORIC AMERICAN ENGINEERING RECORD

ALLEGHENY PORTAGE RAILROAD, LILLY CULVERT

HAER No. PA-452

Location:	Spanning Burgoon Run at State Rt. 53, Lilly, Cambria County, Pennsylvania.
USGS Quadrangle:	Cresson, Pennsylvania (7.5-minute series, photorevised 1981).
UTM Coordinates:	17/701980/4477320
Date of Construction:	1832.
Designer:	Allegheny Portage Railroad (Commonwealth of Pennsylvania).
Builder:	Brown, Sawyer and Brown, contractors.
Present Owner:	Pennsylvania Department of Transportation.
Present Use:	Vehicular bridge.
Significance:	The Lilly Culvert is significant as an outstanding example of early nineteenth-century masonry arch construction, and for its association with the Allegheny Portage Railroad, which the bridge originally carried across the stream now known as Burgoon Run. The Allegheny Portage Railroad, a system of rail lines and inclined planes completed in 1834, was designed to carry boats from the Pennsylvania Main Line Canal across the Allegheny Mountains. Although the entire railroad was abandoned in 1857, the Lilly Culvert was converted to vehicular traffic in 1855 when a section of railroad was rerouted to avoid the inclined planes. The bridge was listed in the National Register of Historic Places in 1988.
Historian:	Dr. David S. Rotenstein, August 1997.
Project Information:	This bridge was documented by the Historic American Engineering Record (HAER) as part of the Pennsylvania Historic Bridges Recording Project - I, co-sponsored by the Pennsylvania Department of Transportation (PennDOT) and the Pennsylvania Historical and Museum Commission during the summer of 1997. The project was supervised by Eric DeLony, Chief of HAER.

DESCRIPTION

The Lilly Culvert spans Burgoon Run with an elliptical stone arch of 18'-0" span and 6'-6" rise. Between the curving wing walls, the head walls measure 27'-0" wide and 19'-0" high; including the wing walls, the bridge's overall length is 42'-0". The bridge carries an 18'-0" wide roadway and is 22'-0" wide overall.

Like many other railroad bridges and culverts in Cambria County, the Lilly Culvert was constructed of local sandstone. Here, the stone is laid as coursed ashlar blocks with lime mortar joints.[1] A special characteristic of the Lilly Culvert is the original timber cribbing exposed at several points in the streambed. The culvert's wing walls are also notable, for they are curved on both the upstream and downstream sides of the structure. The lack of a parapet underscores the culvert's intended function to carry the portage railroad over Burgoon Run.

HISTORICAL INFORMATION

Allegheny Portage Railroad

Between the mid-1820s and 1850 or so, Pennsylvania undertook and sponsored a massive program of internal improvements, including the construction of canals, turnpikes, and railroads.[2] In 1826, the Pennsylvania legislature passed an act authorizing the construction of a cross-state canal linking Philadelphia with Pittsburgh.[3] Like their counterparts in New York on the Erie Canal, Pennsylvania's canal builders had a nearly insurmountable problem: providing passage across the natural barrier formed by the Allegheny Mountains.[4] Pennsylvania's canal commissioners believed they had found a solution to the problem by constructing a series of ten inclined planes connected by a portage railroad thirty-six miles long.

On 4 March 1828, the Pennsylvania legislature passed an act which led to the birth of the Pennsylvania Railroad: "An Act Relative to the Pennsylvania canal, and to provide for the commencement of a rail road, to be constructed at the expense of the state, and to be styled the

---

[1] Ralph W. Stone, *Building Stones of Pennsylvania,* Pennsylvania Geological Survey, Fourth Series, Bulletin M-15 (Harrisburg: Pennsylvania Geological Survey, 1932), 85.

[2] Pennsylvania's transportation history has been amply and voluminously documented by historians, economists, and engineers. Although a complete discussion is beyond the scope of this report, the history of the survey and construction of the Allegheny Portage Railroad is covered at length in Anna Coxe Toogood, *Historic Resource Study: Allegheny Portage Railroad National Historic Site, Pennsylvania* (Washington, D.C.: U.S. Department of the Interior, National Park Service, Denver Service Center, 1973).

[3] David Fritz and A. Berle Clemenson, *Pennsylvania Main Line Canal: Juniata and Western Divisions* (Washington, D.C.: United States Department of the Interior, National Park Service, 1992), 4.

[4] Fritz and Clemenson, *Pennsylvania Main Line Canal*; Elizabeth Brand Monroe, *The Wheeling Bridge Case: Its Significance in American Law and Technology* (Boston: Northeastern University Press, 1992), 16; Toogood, *Historic Resource Study,* 1-2.

Pennsylvania rail road."[5] The survey and construction of the Allegheny Portage Railroad was authorized in Section 4 of that same act:

> [T]he board of canal commissioners are authorized and required, to locate by the most eligible route a rail road across the Allegheny mountain, with a view of connecting the Juniata and Conemaugh sections of the Pennsylvania canal, and they are further authorised [sic.], to make such contracts as will secure the completion of said rail road, as early as the completion of said sections of canal.[6]

In addition to the Allegheny Mountains, engineers involved in designing and constructing the portage railroad also had to cross several rivers and many intermittent streams. By the time the Allegheny Portage Railroad was completed, there were four viaducts spanning the Conemaugh River and three branches of the Juniata River, and sixty-eight culverts.[7]

Culverts

Engineers responsible for surveying and constructing the Allegheny Portage Railroad determined that seventy-two culverts would be required to cross small streams within the road's corridor. In a November 1831 report to the Board of Canal Commissioners, chief engineer Sylvester Welch wrote,

> The viaducts, culverts, etc. are supposed to be contracted for, generally, at fair prices. Some of the small culverts will probably be abandoned, but they will be built by other contractors at prices not differing materially from those fixed by the existing contracts. A careful estimate has been made of each viaduct, culvert, etc. And the actual cost, when finished, cannot vary, naturally, from the amount stated below.[8]

Welch estimated the total cost for the construction of "viaducts, culverts, bridges, etc." at $110,473.68. This figure represented approximately nine percent of the total estimated cost of just over $1.25 million for the entire railroad.

---

[5] Commonwealth of Pennsylvania, P.L. 221 (1828).

[6] Pennsylvania, P.L. 221, Section 4.

[7] Toogood, *Historic Resource Study,* 36.

[8] Letter report of Sylvester Welch, 14 Nov. 1831, Box 8, Record Group 17, Board of Canal Commissioners, Allegheny Portage Railroad Divisional Records, Pennsylvania State Archives, Harrisburg, Pa. (hereafter cited as APRR Records).

According to engineer Welch, there were two types of culvert: those with spans of ten feet or more and those with spans under ten feet.[9] Culverts on the Portage Railroad had spans that ranged from three feet to twenty-five feet (Table 1).

Table 1 Allegheny Portage Railroad Culverts.

Span	Number of Culverts	Percent of Total
3'	52	57.14
4'	7	7.69
5'	6	6.59
7'	4	4.40
8'	2	2.20
10'	5	5.49
12'	3	3.30
14'	3	3.30
16'	2	2.20
18'	4	4.40
20'	1	1.10
25'	2	2.20
Total	91	100

Source: S. Jones,"Report of S. Jones, Superintendent," *Pennsylvania House of Representatives Journal, House Report* 47, No. 1, Appendix (1831): 184.

A majority of the culverts constructed along the Allegheny Portage Railroad corridor were small culverts with three-foot spans. As the project neared its completion, Welch wrote,

> The culverts are built of good stone laid in common lime mortar. The faces of the walls at the ends of each culvert are built of hammered stone, laid in courses. The coping and steps and the voussoirs that form the heads of the arch, are smoothly cut.[10]

The Board of Canal Commissioners selected thirty-nine contractors to construct culverts for the Portage Railroad. Construction commenced in the middle of 1831 and was completed by

---

[9] Sylvester Welch, "Report of Sylvester Welch, Engineer," *Pennsylvania House of Representatives Journal, House Report* 47, No. 1 (1831): 187.

[10] Sylvester Welch, "Report of Sylvester Welch, Engineer," *Pennsylvania House of Representatives Journal, House Report* 15, No. 7 (1832): 76.

the end of 1832. In November 1831, Sylvester Welch wrote, "Considerable progress has been made in the construction of the culverts." He added,

> There are twenty, of ten feet span and upwards, of these, the foundations of thirteen have been laid, and the masonry commenced. Several of them are nearly completed; of the remaining seven, the pits for five are excavated, and the materials for the culverts are partly delivered — on the remaining two, nothing of importance has been done. Of the smaller culverts, fifty-two in number, the mason work on twenty has been commenced. Several of them are finished, and others are far advanced towards completion. The remaining thirty-two, are generally from three to five feet span — materials are delivered at some of them; and, at others nothing has been done.[11]

One year later, on 1 November 1832, Welch was able to report, "The culverts and viaducts are all finished or in an advanced state."[12] According to Welch, construction was delayed because of a severe winter and difficulties in obtaining labor.[13] Despite the delays, however, construction of the culverts exceeded construction estimates by only $704.39.[14]

The Portage Railroad: A Short Life

Although portions of the Pennsylvania Main Line Canal were operating between Philadelphia and Pittsburgh by 1829, the line was not completely open until the completion of the Allegheny Portage Railroad in the spring of 1834.[15] By the time the works were completed, the system already had been rendered obsolete by emerging railroad technology. Because of the time and expense involved in use of the inclined plane system along the portage railroad, in addition to its constant maintenance and repair needs, the facility never made a profit and was constantly the source of complaints from shippers, merchants, and industrialists.

William Bender Wilson, in his 1899 report on the Pennsylvania Railroad, quoted an 1850 speech by then-governor William F. Johnston: "The Portage Railroad, from the completion of our line of improvements to the present time, has been a serious obstacle to the business of the community and the occasion of trade seeking other channels to the Atlantic markets."[16] In 1845,

---

[11] Welch, "Report" (1831): 187.

[12] Welch, "Report" (1832): 73.

[13] Welch, "Report" (1832): 73.

[14] Welch reported that the aggregate estimated cost for the culverts was $33,782.23 and the actual cost, in 1832, was $34,486.62; see Welch, "Report" (1832): 77-78.

[15] Fritz and Clemenson, *Pennsylvania Main Line Canal*; Toogood, *Historic Resource Study.*

[16] William Bender Wilson, "The Evolution, Decadence and Abandonment of the Allegheny Portage Railroad," in *The Allegheny Portage Railroad: Annual Report of the Secretary of Internal Affairs 1898-1899,* ed.

Hunt's Merchant's Magazine observed of the Allegheny Portage Railroad, "during the ten years this railway has been in operation, it has not produced any net revenue."[17]

Less than six months after Johnston's scathing commentary on the portage railroad, the Pennsylvania legislature passed an act to construct an alternate rail route to avoid the inclined planes.[18] Although a relocated route was established and went into use in 1855, the Allegheny Portage Railroad was closed 1 November 1857, and much of its masonry and rails were salvaged by its new owner, the Pennsylvania Railroad, for use in other facilities: "The Portage roads, both old and new, having outlived their usefullness [sic.], were abandoned."[19]

Lilly Culvert

The Lilly Culvert was officially known as "Culvert A on Section 30" of the Allegheny Portage Railroad. [20] Section No. 30 was 3,600'-0" long and its course included Inclined Plane No. 4:

> The line passes over sloping ground favorable for the constructing of the road 900 feet to Bear Rock Creek — Then over a low flat 500 feet to the foot of Incline Plane No. 4 — Then up the hill nearly at right angles to the directions of its base at this point 2,100 feet to thc head of the plane — thence over level ground 100 feet to the end of the section.[21]

Spanning what is known today as Burgoon Run, the Lilly Culvert is located about five hundred feet west of the base of Inclined Plane No. 4. During the waning years of the Allegheny Portage Railroad, a small lumber mill community sprang up at the base of Inclined Plane No. 4. A "Map of Road to Avoid Inclined Planes," prepared in the 1850s, shows what became known as the Lilly Culvert spanning Bare Rock Run (now Burgoon Run) east of a cluster of buildings labeled "Lilly's S.M." (saw mill).[22]

Welch, in one of his earliest reports on the survey and construction of the proposed portage railroad, noted that Culvert A on Section No. 30 would have an elliptical span of 18'-0"

Mahlon J. Baumgardner (1900; reprint, 1952), 77.

[17] "Main Line of State Works of Pennsylvania," *Hunt's Merchant's Magazine* 13 (1845): 133.

[18] Wilson, "Evolution, Decadence, and Abandonment," 77.

[19] Wilson, "Evolution, Decadence, and Abandonment," 83.

[20] Welch, "Report" (1831); Welch, "Report" (1832).

[21] Report, Box 8, APRR Records.

[22] Map Book No. 13, APRR Records.

and would contain 275 perches (6,806.25 cubic feet) of masonry.[23] The original estimated cost to construct the culvert was $876.25: $673.75 for masonry at $2.45 per perch, plus $202.50 for 13,500 board feet of timber at 1.5 cents per foot.[24]

The firm of Brown, Sawyer and Brown was awarded the contract to construct the Lilly Culvert. The Lilly Culvert is the only culvert these contractors constructed.

The Lilly Culvert was completed by 1 November 1832.[25] The completed structure contained 266.27 perches (6590.18 cubic feet) of masonry, and 13,326.66 board feet of lumber were used in its construction. The total construction cost of the culvert was $852.26 — three percent less than the $876.25 estimated cost.[26]

After the 1857 abandonment of the Allegheny Portage Railroad, the tracks were removed from the right-of-way in the vicinity of the Lilly Culvert and it was converted into a surface road known as "Portage Street."[27] The Commonwealth of Pennsylvania never relinquished title to the right-of-way after its abandonment of the railroad. In 1911, the Pennsylvania legislature passed an act establishing the State Highway Department (now PennDOT). In addition to creating the departmental architecture for the new agency, the act also transferred "existing public roads, highways, turnpikes ..." into a newly created state highway system.[28] The highway on which the Lilly Culvert is located was designated Legislative Route 276 (now State Route 53), running from Somerset to Clearfield.

In 1988, the Lilly Culvert was listed in the National Register of Historic Places as an element of the multiple resource listing "Highway Bridges Owned by the Commonwealth of Pennsylvania, Department of Transportation." The listing was updated and its boundary increased in 1993.[29]

---

[23] Stone was measured in cords or perches. Although a perch of stone legally consisted of 24 3/4 cubic feet, one description of how masons measured a perch suggests that it was more often 16 1/2 cubic feet. See Harley J. McKee, *Introduction to Early American Masonry* (New York: National Trust for Historic Preservation and Columbia University, 1973), 20.

[24] Report of Sylvester Welch, 5 Mar. 1832, Box 8, APRR Records.

[25] Welch, "Report" (1832).

[26] Welch, "Report" (1832), Table 2.

[27] J. A. Caldwell, *Illustrated Historical Combination Atlas of Cambria County, Pennsylvania* (Philadelphia: Atlas Publishing Co., 1890).

[28] Commonwealth of Pennsylvania, P.L. 468 (1911).

[29] The 1993 amendment rectified several problems with the 1988 nomination, including the name "Lilly Bridge" and its decontextualization from the larger historic resource of the Allegheny Portage Railroad.

SOURCES CONSULTED

Caldwell, J. A. *Illustrated Historical Combination Atlas of Cambria County, Pennsylvania.* Philadelphia: Atlas Publishing Co., 1890.

Cambria County, Pennsylvania. *Deed Books.* Register and Recorder of Deeds, Cambria County Courthouse, Ebensburg, Pa.

_____. *Road Dockets.* Register and Recorder of Deeds, Cambria County Courthouse, Ebensburg, Pa.

Fritz, David, and A. Berle Clemenson. *Pennsylvania Main Line Canal: Juniata and Western Divisions.* Washington, D.C.: United States Department of the Interior, National Park Service, 1992.

Jones, S. "Report of S. Jones, Superintendent." *Pennsylvania House of Representatives Journal, House Report* 47, No. 1, Appendix (1831).

Laws of Pennsylvania.

"Main Line of State Works of Pennsylvania." *Hunt's Merchant's Magazine* 13 (1845): 97-151.

McKee, Harley J. *Introduction to Early American Masonry.* New York: National Trust for Historic Preservation and Columbia University, 1973.

Monroe, Elizabeth Brand. *The Wheeling Bridge Case: Its Significance in American Law and Technology.* Boston: Northeastern University Press, 1992.

Pennsylvania Department of Transportation. Bridge inspection file, BMS No. 11-0053-0230-2476, PennDOT Distriet 9-0, Hollidaysburg, Pa.

_____. *Historic Highway Bridges in Pennsylvania.* Harrisburg: Pennsylvania Department of Transportation, 1986.

Pennsylvania State Archives, Harrisburg, Pennsylvania. Record Group 17, Board of Canal Commissioners, Allegheny Portage Railroad Divisional Records.

Stone, Ralph W. *Building Stones of Pennsylvania.* Pennsylvania Geological Survey, Fourth Series, Bulletin M-15. Harrisburg: Pennsylvania Geological Survey, 1932.

Toogood, Anna Coxe. *Historic Resource Study: Allegheny Portage Railroad National Historic Site, Pennsylvania.* Washington, D.C.: U.S. Department of the Interior, National Park Service, Denver Service Center, 1973.

Welch, Sylvester. "Report of Sylvester Welch, Engineer." *Pennsylvania House of Representatives Journal, House Report* 47, No. 1, Appendix (1831).

_____. "Report of Sylvester Welch, Engineer." *Pennsylvania House of Representatives Journal, House Report* 15, No. 7, Appendix (1832).

Wilson, William Bender. "The Evolution, Decadence and Abandonment of the Allegheny Portage Railroad." In *The Allegheny Portage Railroad: Annual Report of the Secretary of Internal Affairs 1898-1899,* ed. Mahlon J. Baumgardner. 1900. Reprint, 1952.